use by the public. The Cassegrain focus of the 60-inch telescope is easily accessible, however, and this instrument has accordingly been arranged for use by the public on Friday evenings. Tickets are issued without charge to those who send their requests to the office of the Observatory in Pasadena.

PLANETARY PHENOMENA FOR JANUARY AND FEBRUARY, 1922

By Malcolm McNeill

PHASES OF THE MOON, PACIFIC TIME

First Quarter	Jan.	6,	2^h24^m	A.M.	
Full Moon	"	13,	6 36	A.M.	
Last Quarter	"	19,	10 0	P.M.	
New Moon	"	27,	3 48	P.M.	
First Quarter	Feb.	4,	8^h52^m	P.M	
Full Moon	"	11,	5 17	P.M	
Last Quarter	"	18,	10 18	A.M	
New Moon	"	26,	10 48	A.M	

During the year there will be only two eclipses, both of the Sun, as always happens under such circumstances, and neither of them visible to any extent in the United States. The first is an annular eclipse of the Sun on March 28, and the second a total eclipse[1] of the Sun on September 20-21.

Mercury is an evening star on January 1 having passed superior conjunction with the Sun late in December, but is entirely too close for naked eye view. Its distance from the Sun increases until January 29 when it reaches greatest east elongation, 18°23′. This is a very small greatest elongation since it reaches perihelion only four days later. Shortly after the middle of January it sets an hour after sunset and may be seen in the evening twilight under good weather conditions. For a few days about the time of greatest elongation it remains above the horizon about an hour and one half after sunset, and is therefore an easy naked eye object for it is then brighter than any star in the sky except *Sirius*. It passes inferior conjunction with the Sun and becomes a morning star on February 14, but remains too near the Sun for naked eye view until after the end of February, the interval between the rising of the planet and of the Sun being less than an hour. On the evening of January 29 the planet is about 3° south of the Moon.

Venus is a morning star during January but is too near the Sun for naked eye view. It passes superior conjunction with the Sun

[1]See Dr. Campbell's note on this eclipse in the October number of these Publications.

on the evening of February 8 and becomes an evening star. At this date the planet is about 3° south of the Sun. During the rest of the month *Venus* slowly draws away from the Sun, but at the end of February the planet sets only about half an hour after sunset. On account of its great brightness there is a slight possibility that it may be seen in the evening twilight soon after sunset under exceptionally good weather conditions.

Mars during 1922 will be in better position for observation than it has been since 1909, altho not as good as it will be during 1924. This latter date will give the nearest approach to the Earth for many years. During January and February the planet will be a morning object rising at about 2 A.M. on January 1 and shortly before 1 A.M. on February 28. During the two months it will move about 32° eastward and 9° southward from the constellation *Virgo* into *Scorpio*, and at end of February it will be about 2° west and 6° north of *Antares*, the first magnitude red star in *Scorpio*, and the planet will be brighter than the star. During the two months its brightness increases about one magnitude, being about the same magnitude as *Antares* during the last few days in January. Its distance from the Earth diminishes nearly a million miles per day, running from 164 on January 1 to 110 on February 28.

Jupiter rises shortly before 1 A.M. on January 1 and at about 9 P.M. on February 28. It is in quadrature with the Sun on January 8. It is in the constellation *Virgo* and moves eastward not quite 2° up to February 3. Then it stops its eastward motion and begins to move westward or retrograde along nearly the same line. At the end of February it is about one-half degree eastward of its January 1 position. During the two months it is near the first magnitude star *Spica*, *α Virginis*, its nearest approach being early in February when it is 2° west and 4° north of the star. On January 18 and again on February 18 the Moon passes a little south of *Jupiter* and the planet is occulted for regions far south of the equator. This near approach occurs every lunation thru-out the year, but the only one yielding an occultation visible in the United States occurs in September. Of course the Moon passes every planet each month, but seldom as closely as all of these conjunctions with *Jupiter*.

Saturn is in the same part of the sky as *Jupiter*, about 10° west and north, moving eastward about 15′ up to January 17 and then slowly westward, being at the end of February about 1° west of its January position. Its line of retrograde motion is somewhat north

of its line of eastward motion. Its brightness is about that of an ordinary first magnitude star on January 1, but this increases perceptibly during the two months. As seen in the telescope the minor axis of the rings is about one-tenth of the major. This fraction increases to about one-fifth during the course of the year. This will cause an increase in brightness of the planet which is quite perceptible.

Uranus is in the southwestern sky in the evening setting shortly after 9 P.M. on January 1, and before 6 P.M. on February 28. It comes to conjunction with the Sun on February 28. During the period it moves about 3° east and north in *Aquarius*. No very conspicuous star is near, and, especially during February, the planet is a little too near the Sun for naked eye view. *Venus* passes a little less than 1° south of *Uranus* on February 24.

Neptune is in opposition on February 3. It is moving slowly westward in the constellation *Cancer*, too faint to be seen without a telescope.

NOTES FROM PACIFIC COAST OBSERVATORIES

Nova Aquilae No. 4

This star was discovered by Dr. M. Wolf and announced by him in *A. N.* **211**, 119 as a variable star or nova. According to *Harv. Bull.* No. 753 the star later was named *Nova Aquilae* No. 4. The spectrum of the star has not hitherto been studied, and the object is evidently very little observed. For the sake of completeness we collect the estimates of brightness made by other observers:

Epoch	Mag.	Observer	Epoch	Mag.	Observer
1898.614	<14	Wolf	1918.515	≤12 (?)	Wolf
1902.528	<15	"	18.657	=11.8	Miss Woods
04.509	=16 (?)	"	19.507	=10.4	Wolf
06.559	<11	"	19.512	=10.3	Mündler
08.509	<14	"	19.542	=10.3	"
08.553	<11	"	19.575	=10.2	"
08.556	<10	"	19.578	=10.5	"
08.567	<12	"	19.602	=10.3	"
09.600	<15	"	19.622	=10.3	"
10.537	<14	"	19.632	=10.2	"
10.600	<15	"	19.668	=10.5	"
14.485	<14	"	19.734	=10.3	"
17.701	=15.0	Miss Woods	20.	<11.5	Miss Woods
			21.331	=12.7	"